JUSTIFICATION FOR ANNUAL MEDICAL EVALUATIONS FOR FIRE FIGHTERS

Executive Leadership Course

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ABSTRACT

Graham Fire & Rescue does not periodically evaluate whether employees are physically capable of performing interior structural fire fighting. Therefore, the health and safety of the employees are compromised and the risk of legal liability to the fire district is increased.

The purpose of this research project was to investigate and justify why fire agencies should establish a periodic medical evaluation program.

The author used a combination of descriptive and evaluative methodologies to answer the research questions:

1. Excluding regulations, why should employers periodically evaluate the capability of their employees to perform interior structural fire fighting?
2. Why are task performance physical ability tests, challenged in the courtroom?
3. How do other fire agencies in the State of Washington evaluate the physical capability of their employees to perform interior structural fire fighting?
4. What state or federal regulations require employers to periodically evaluate employees for physical capability to perform interior structural fire fighting?

The author requested a literature review from the LRC at the National Fire Academy, distributed a physical fitness survey to 369 fire agencies in the State of Washington, reviewed employee health and safety regulations, extracted data from the Internet and conducted a personal interview with a health and safety expert.

The results of this research project concluded that due to high incidents of heart attack, the demand for physical prowess in fire fighting, and the natural aging process of workers, employers should periodically evaluate the physical capability of their employees. Task performance physical ability tests, were subject to challenges in court. Though the majority of

fire agencies in the State of Washington do not periodically evaluate their employees, both state and federal regulations require periodic testing of employees who use respirators.

With a goal to implement periodic medical evaluations for employees, the author recommended adoption of the NFPA 1582 standard for his fire agency.

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INTRODUCTION

After fire fighters are hired, Graham Fire & Rescue does not evaluate whether employees are physically capable of performing interior structural fire fighting. Therefore, the health and safety of the employees of the fire district is compromised. In addition, the possibility of litigation involving the fire district, for failure to provide a safe and healthy work environment, is increased.

The purpose of this research paper was to investigate why fire agencies should establish a periodic medical evaluation program for evaluating the physical capabilities of employees to perform structural fire fighting.

This author employed a combination of descriptive and evaluative methodologies to determine the answers to the following research questions:

1. Excluding regulations, why should employers periodically evaluate the capability of their employees to perform interior structural fire fighting?
2. Why are task performance physical ability tests, challenged in the courtroom?
3. How do other fire agencies in the State of Washington evaluate the physical capability of their employees to perform interior structural fire fighting?
4. Which state or federal regulations require employers to periodically evaluate employees for physical capability to perform interior structural fire fighting?

BACKGROUND AND SIGNIFICANCE

Graham Fire & Rescue provides fire suppression, hazardous materials response, advanced life support transport, and public education to a population of approximately 50,000 citizens. The suburban and rural area of 110 square miles is located in the second most

populated county in the State of Washington. In addition, Boeing Inc. has sited an $800 million aero-manufacturing facility, within the fire district. A combination workforce of career and volunteers, provide the services by responding out of five fire stations.

At a live fire training session in 1998, a fire fighter nearly sustained major respiratory injuries when she removed her SCBA face piece, while making an interior attack on the training fire. Quick action by the back-up crew, instructor and team member prevented injury, though the safety of all personnel, were at risk. The fire fighter was evaluated through task performance evolutions and subsequently returned to full fire fighter response status.

The incident brought forth the fact, that as a fire district, Graham Fire & Rescue did not periodically evaluate the physical capability of personnel to perform interior structural fire fighting. Overall consideration was given to which employees and when did the district assess the health of its employees. Members of the Hazardous Material Response Team received a complete medical evaluation at least every two years. New recruits, both career and volunteer, received a complete medical evaluation prior to attending the recruit academy. In addition, employees who returned to work after extended leave due to illness or injury were required to submit a doctor's release. In summary, unless an employee was on the haz-mat team, a new recruit or recently injured, the administrators of the district were uncertain of the physical capability of the employees to perform interior structural fire fighting.

The significance of knowing the health status of emergency responders became greater with the federal and state mandated "two in/two out" regulation. As with most combination fire agencies, fire scene personnel numbers are lacking during the initial moments of a structure fire. The new regulation requires stand-by fire fighters to possess the necessary protective clothing, protective equipment and SCBA to effect a rescue should the interior fire fighting team

encounter trouble. The safety of personnel at an emergency scene depends on the incident commander knowing the physical capabilities of the responding personnel.

The Executive Fire Officer Course, Executive Leadership, defined a leaders role in shaping an organization's culture. An important aspect of an organization's culture was adaptation and how people deal with external forces and the need to change. Federal and state regulations (external forces) demand accountability of administrators for knowing the physical capability of the employees in the organization. The methods the administrator employs to submit change will impact the success of the change. When an organization experiences an incident of successful change, the organizational culture will be more likely to accept the next mandate from an external force.

LITERATURE REVIEW

Fitness status is not necessarily indicative of a fire fighter's ability to perform physically. Fire fighters who perform adequately on the job, but possess coronary heart disease may suffer a heart attack (Davis, 1996). Davis states, this is one reason heart attacks are the most prevalent cause of death in the fire service and that it is the department chief that is charged with insuring that members are physically capable of performing their assigned tasks safely and effectively. These findings enforced the author's belief that task performance evolutions may not adequately portray an employee's physical ability to perform job functions.

Usually, the factors that contribute to the likelihood of a heart attack develop over a long period of time. Annual evaluations and other diagnostic testing can help discover a problem that may be corrected before it is too late (ISFSI, 1991).

Heart attack continued to be the leading cause of United States fire fighter deaths in the period from 1986 through 1995 (NFPA, 1997). Approximately half of the fire fighter deaths experienced each year result from heart attacks and most of the victims for whom medical documentation is available had known or detectable heart problems. Victims over the age of sixty were mostly volunteers, possibly due to the tendency of volunteer fire fighters to remain active well beyond the retirement ages of career fire fighters (NFPA). In addition, a comparison of deaths per 100,000 fire fighters in 1993-1995 vs. 1983-1985, show the career fire fighter death rate down 51 percent and the volunteer fire fighter death rate down only 10 percent (NFPA).

The volunteer personnel who will use SCBA, as well as all, active responding members, will need an annual physical (Goldfelder, 1992). Some members may object to physicals but the organization's leadership must require it for the safety of all concerned. If it is not required, medical and legal situations may arise (Goldfelder). The high incidents of heart attack in the fire service and the slower improvement rates of morbidity for volunteer fire fighters, convinced the author of the need to establish periodic medical evaluations for both career and volunteer fire fighters.

Davis (1996) believes the purpose of adopting physical fitness standards is to ensure the fire fighters possess and maintain the physical ability to perform their jobs without undue risk to themselves or others.

Rafilson (1995) reports, there are compelling reasons for fire departments to continue physical ability testing of employees. A person not physically able to perform the job could pose a direct threat to human life and safety. The department may be legally liable for employing people who cannot perform the essential functions of the job. The author concurs that in today's

litigating society, an employer is liable for the non-ability of employees to perform their job functions.

The fact that we're all aging on the job virtually ensures that workers, who were once average, will in fairly short order fall below that mark. The continual demand for physical prowess is one of the characteristics that clearly differentiates fire fighting from other occupations. The author agrees the physical demands placed on fire fighters are greater than most other occupations. Thus, the need to test individuals is justified, to ensure that they perform essential functions throughout the span of their employment (Davis, 1994).

A significant phase of a fire department safety program is maintaining a physical inventory of personnel (IFSTA, 1991). Pre-employment, periodic, and terminal examinations should be part of any department's safety program. The examination should be extensive, including laboratory tests, chest X-rays, vision and hearing tests, and lung function tests (IFSTA).

The National Fire Protection Association (NFPA) 1500, Standard on Fire Department Occupational Safety and Health Administration (OSHA) Program, among other things, emphasizes the wellbeing of the fire fighter, especially his or her health and physical fitness (NFPA, 1997). NFPA 1500 suggests all members who engage in fire suppression shall be medically evaluated periodically as specified in NFPA 1582, on at least an annual basis (NFPA). The annual medical evaluation shall consist of an interval medical history, an interval occupational history, including significant exposures, height, weight and blood pressure documentation, and a medical evaluation annually based on years of age (NFPA, 1992).

Typically, developing physical performance standards for a fire department means conducting a job-task analysis, defining a set of tasks that represent essential job functions,

organizing these tasks for use as a testing instrument, and then conducting a study to ensure that the test is valid and reliable (Pranka, 1993).

A paper done for the *Public Personnel Management Journal* (Avery, Landon & Nutting, 1992) reports physical ability tests have encountered numerous problems in court contexts. The most salient issue is that many physical test events tend to have an adverse impact against females and individuals of certain nationalities (e.g. Hispanics, Asians, etc.). The following problems and issues appear to be relevant in litigation involving the content validity of physical ability tests:

1. The job analysis failed to adequately tap relevant physical duties and performance requirements.
2. The adequacy of the job analysis is often challenged via assertions that the sample was not sufficiently large, that inappropriate raters were used, or that the sampling plan was inappropriate.
3. The physical ability test events, over or under emphasize relevant aspects of the job.
4. The fidelity of relationship between the test events to the job, are unalike.
5. The degree to which tasks and events are performed uniformly in job situations.
6. The development of test events to deal conceptually with tasks, which are of great importance but performed infrequently.

The author felt these validation concerns, make the use of task performance testing suspect, leaving the agency who employs the testing process, ripe for litigation.

Hogan and Quigley (1994) relayed that when non-validated tests yield adverse impact, employers will be required to demonstrate validity or abandon these assessments. While a

fitness standard is entitled to presumptive validity, a civil service employee may challenge the standard as arbitrary and unenforceable (Des Moines v. Civil Service Commission, 1992).

Title 29, Code of Federal Regulations (CFR), 1910.134 Respiratory Protection (1992), requires the employer to provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. It further states, the employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

The State of Washington is one of 23 states who have earned the approval of federal OSHA to implement their own "state plan", for worker health and safety (IAFF/IAFC, 1998).

Washington Administrative Code (WAC), 296-62-07109 Respiratory Protection (1982), states the respirator program administrator, using guidelines established by a physician, shall determine whether or not a person may be assigned to a task requiring the use of a respirator. The code further states that all respiratory users' medical status should be reviewed annually.

WAC, 296-305-01509 Management's Responsibility (Labor & Industries, 1998), proposes for adoption, language that requires the employer to assure that employees who are expected to do interior structural fire fighting are physically capable of performing the duties which may be assigned to them during emergencies. Additional language mandates the employer shall not permit employees with known heart disease, epilepsy, or emphysema, to participate in structural fire fighting emergency activities, unless a physician's certificate of the employee's fitness to participate in such activities is provided.

WAC, 296-305-5001 Emergency Fire-ground Operations-Structural (1996), requires a single stand-by fire fighter to monitor the status of a fire fighting team inside a structure. The code also requires the stand-by fire fighter to be in full protective equipment and SCBA.

Proposed for amendment to WAC, 296-305-5001, is a requirement to dedicate two stand-by fire fighters to monitor the interior team of fire fighters (Labor & Industries, 1998). Again, all stand-by fire fighters must be fully equipped with the appropriate protective clothing, protective equipment and SCBA.

George King, Washington Labor & Industries, Technical Specialist (personal interview, Nov. 1998), believes the changes to both WAC, 296-305-05001 and WAC, 296-305-01509 will occur by state adoption in 1999. He further stated the changes were brought forth to comply with the new OSHA Respiratory Standards, adopted in the spring of 1998.

The author, for research paper format, used the Publication Manual of the American Psychological Association (APA, 1994).

PROCEDURES

The author began this research project by requesting a literature review from the Library Resource Center at the National Emergency Training Center in Emittsburg, MA. Subjects researched were general physical agility tests, volunteer fire fighter tests and fire fighter safety.

Approximately two months prior to writing the project paper, the author mailed an introduction letter, a fire fighter fitness survey (Appendix A) and a stamped return envelope to the 369 fire agencies in the State of Washington. The fire agency names and addresses were taken from the Washington State Fire Service Directory (WFCA & WSFC, 1998). All fire agencies in the state; volunteer, combination and career were surveyed due to the author's belief that the safety and health of a fire fighter is not dependent on the type of agency that employs them.

The author wanted to know if other agencies evaluated fire fighter physical capabilities, in the State of Washington, and how often the evaluations occurred. A little over 50% of the surveys were returned (187). This high return rate was attributed to the one page, user-friendly format of the survey.

Information relating to the "two in/two out" regulation was gained over the Internet by connecting to the International Association of Fire Chiefs web site (IAFF & IAFC, 1998).

The author realized limitations of the survey and the overall research paper, because the population surveyed was inclusive to the State of Washington. With a goal to research a topic that would contribute to the author's organization, a determination was made to investigate other fire agencies that were regulated by the same employee safety and health enforcement agency.

Regulatory standards were researched utilizing in-house manuals from the federal Occupational Safety and Health Administration and the State of Washington, Labor and Industries.

The author determined a Definition of Terms was not necessary, as the research paper did not contain any ambiguous terms.

RESULTS

The answers to the research questions were derived from an analysis of the information provided in the literature review. Additionally, a survey was distributed to fire agencies in the State of Washington, of which the author used to evaluate compliance with safety and health regulations.

1. **Excluding regulations, why should employers periodically evaluate the capability of their employees to perform interior structural fire fighting?**

The purpose of adopting physical fitness standards is to ensure the fire fighters possess and maintain, the physical ability to perform their jobs without undue risk to themselves or others (Davis, 1996).

A person not physically able to perform the job could pose a direct threat to human life, and the department may be legally liable for employing people who cannot perform the essential functions of the job (Rafilson, 1995).

The continual demand for physical prowess is one of the characteristics that clearly differentiates fire fighting from other occupations. The fact that we're all aging on the job virtually ensures that workers who were once average will in fairly short order fall below that mark (Davis, 1994).

Heart attack continues to be the leading cause of fire fighter deaths in the United States (NFPA, 1997). Fitness status is not necessarily indicative of a fire fighter's ability to perform physically. Fire fighters who perform adequately on the job, but possess coronary heart disease may suffer a heart attack (Davis, 1996)

Annual evaluations and other diagnostic testing can help discover and correct the factors that contribute to a heart attack (ISFSI, 1991).

Volunteer fire fighters tend to remain active longer than career fire fighters (NFPA, 1997). For this reason they have a higher incident of heart attack over the age of sixty. All active responding volunteer personnel who use an SCBA should have an annual physical (Golfelder, 1992).

A significant phase of a fire department safety program is maintaining a physical inventory of personnel. Pre-employment, periodic, and terminal examinations should be part of any department's safety program (IFSTA, 1991).

NFPA 1500, suggests all members who engage in fire suppression shall be medically evaluated periodically, as specified in NFPA 1582, on at least an annual basis (NFPA, 1997).

2. Why are task performance physical ability tests, challenged in the courtroom?

A typical fire department performance test is based on conducting a job-task analysis, leading to a defined set of tasks that represent essential job functions (Pranka, 1993). The most salient issue is that many physical test events tend to have an adverse impact against females and individuals of certain nationalities (Avery, "et al.", 1992).

Hogan and Quigley (1994) relayed employers must validate physical ability assessments or abandon them. A civil service employee may challenge a fitness standard as arbitrary and unenforceable (Des Moines v. Civil Service Commission, 1992).

Common issues raised in the courtroom were, the job analysis failed to tap relevant physical duties, the job analysis was too narrowly surveyed, the test events did not properly emphasize the aspects of the job, and uniformity of test events in relationship with job situations. Additional issues were lack of fidelity of relationship between test events and the job and the failure to deal conceptually with tasks that are of great importance but performed infrequently (Avery, "et al.", 1992).

3. How do other fire agencies in the State of Washington evaluate the physical capability of their employees to perform structural fire fighting?

A physical fitness survey was sent to the 369 fire agencies in the State of Washington. Of the 187 surveys that were returned to the author, forty-three agencies (23%) evaluated their employees at least annually, with thirty-five agencies (19%) evaluating their employees after an

extended leave of absence. Sixteen agencies (9%) evaluated their employees as a result of poor work performance.

Inclusive of the agencies that tested the physical fitness levels of their employees, 58% used task performance evaluations or evolutions. In addition, 25% used medical evaluations, 11% used anaerobic evaluations, with the remainder of the agencies failing to specify the method used.

Of the 187 survey respondents, 55% did some level of physical ability testing, with 45% doing no testing at all.

The fire fighter fitness survey did not solicit the type of fire agency, i.e. career, volunteer or combination. An unexpected finding though, was that many of the respondents that indicated their agency did no testing of capabilities, did make reference that their agency was all volunteer. Two specific references were, "We are a volunteer department and thankful for those that join", and, "We are volunteer only, we're luck to have bodies".

4. What state or federal regulations require employers to periodically evaluate employees for physical capability to perform interior structural fire fighting?

The federal regulation, CFR, Respiratory Protection (1992), requires the employer to provide medical evaluations to determine the employees' ability to use a respirator. The regulation further states, the employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

The State of Washington WAC, Respiratory Protection (1982) states that all respirator users' medical status should be reviewed annually, using guidelines established by a physician. George King (personal interview, Nov. 1998), believes an amendment to WAC, Management's Responsibility (Labor & Industries, 1998), will be adopted in 1999, requiring the employer to

assure that employees who are expected to do interior structural fire fighting are physically capable of performing the duties which they may be assigned.

WAC, Emergency Fire Ground Operations-Structural (1996), presently requires a stand-by fire fighter in SCBA, to monitor the status of a crew in the interior of a structure. An amendment is forthcoming requiring two stand-by fire fighters in SCBA, to monitor the status of interior crews (Labor & Industries, 1998).

DISCUSSION

The decision to research the necessity for employers to periodically evaluate the physical capabilities of employees was driven by a near disastrous incident at a live fire training session at the author's fire agency. After the initial hiring process, Graham Fire & Rescue did not periodically evaluate whether employees were physically capable of performing interior structural fire fighting.

The results of a physical fitness survey, sent to 369 fire agencies in the State of Washington, implied that the majority of fire agencies did not periodically evaluate the physical capabilities of employees to perform interior structural fire fighting. Of the 187 surveys that were returned, 23% evaluated their employees at least annually. In addition, 19% evaluated their employees after an extended leave of absence, and 9% of the fire agencies evaluated employees as a result of poor work performance.

An unsolicited finding of the survey was that many of the fire agencies that did no testing of physical capabilities were all volunteer departments. There may be a correlation with this finding and the fact that there was only a 10 percent reduction in volunteer fire fighter deaths

from 1985-1995, while during the same time period, career fire fighter deaths were reduced 51 percent (NFPA, 1997).

There are multiple reasons why an employer should periodically evaluate the physical capabilities of their employees to perform the job functions they are assigned. The main reason is to ensure the health and safety status of the employees. Davis (1996) reports the purpose of adopting physical fitness standards is to ensure the fire fighters possess and maintain the physical ability to perform their jobs without undue risk to themselves or others. Rafilson (1995) states a person not physically able to perform the job poses a direct threat to human life and safety.

Most fire agencies employ some sort of entry level, physical ability testing process. A serious health and safety problem in the State of Washington is that most agencies do not periodically test employees after they are hired. Heart attack continues to be the leading cause of fire fighter death in the United States and most victims for whom medical documentation was available had known detectable heart problems (NFPA, 1997). A twenty-two year old fire fighter who successfully passes the entrance exam, may collapse of a heart attack at the age of forty-five, at the scene of a structure fire. Davis (1994) relays the fact that we're all aging on the job and that once physically fit workers will diminish in fitness as they get older. He suggests employees be physically tested throughout the span of their careers.

The majority of fire agencies who responded to the fire fighter fitness survey, that tested the physical ability of their employees, used task performance evaluations or evolutions. As an administrator of a fire agency, this author believes an annual medical evaluation is the most effective way, to determine the health status of an employee and their subsequent ability to do the jobs they are assigned. The first argument for support of annual medical evaluations over task performance evaluations centers on the possibility that a fire fighter could pass a timed

evolution on one day and die of a heart attack the next day, at the scene of a structure fire. Davis (1996) conveys a fire fighter could perform adequately on the job, but possess coronary heart disease and suffer a heart attack. Usually the factors that contribute to a heart attack develop over a long period of time and annual evaluation and other diagnostic testing can help discover a problem that may be corrected before it is too late (ISFSI, 1991).

The second justification for annual medical evaluations over task performance testing is the numerous problems that physical ability tests have encountered in the courtroom. Many physical test events tend to have an adverse impact against females and individuals of certain minorities (Avery, " et al", 1992). The most common issues raised in the courtroom dealt with validation of the test events. Hogan and Quigley (1994) relayed employers must validate physical ability assessments or abandon them. Court cases have ruled that fitness standards may be challenged as arbitrary and unenforceable (Des Moines v. Civil Service Commission, 1992). This author believes a fitness evaluation based on medical diagnostic testing is less likely to be challenged than task performance testing.

Nationally recognized associations and organizations recommend periodic medical evaluations for fire fighters. Examinations should be extensive, including laboratory tests, chest x-rays, vision and hearing tests, and lung function tests (IFSTA, 1991). Annual evaluations and other diagnostic testing can help discover a problem that may be corrected (ISFSI, 1991). This author believes NFPA 1582 is the most complete, medical evaluation standard available to fire service agencies. Pre-employment, periodic, and return to work medical evaluations are at the core of the standard (NFPA, 1992).

Other than providing a healthy work environment for the employees of a fire agency, periodic testing of employees should occur, because federal and state enforcement agencies

mandate periodic testing. Fire agencies in the State of Washington must comply with the Department of Labor & Industries regulations (WAC) pertaining to fire fighter health and safety. Other states in the nation may adopt "state plans" for health and safety, while the remainder of the states must comply with federal OSHA regulations (CFR) (IAFF/IAFC, 1998).

The vehicles used to mandate annual medical testing of fire fighters are the respiratory standards. CFR, Respiratory Protection (1992), requires the employer to provide medical evaluations to determine the employee's ability to use a respirator, with the evaluations to continue for as long as the employee is required to use the respirator. WAC, Respiratory Protection (1982) requires that all respiratory users' medical status be evaluated annually.

In the State of Washington, two proposed amendments to existing regulations will mandate the employer ensure the employee is physically capable to perform the job functions they are assigned. WAC, Management's Responsibility (Labor & Industries, 1998), will require employers to ensure employees are physically capable of performing interior structural fire fighting. In addition, WAC, Emergency Fire Ground Operations-Structural (1996), which requires a single stand-by fire fighter in full protective equipment to monitor the status of interior fire fighting crews, is proposed to require two stand-by fire fighters. A Technical Specialist for Labor & Industries (personal communication, Nov. 1998) believes both the proposed amendments will be adopted in 1999.

The fire service refers to the stand-by fire fighter regulation as the "two in/two out" rule. This regulation will provide additional safety for the fire fighters at the fire scene, but will also impact many agencies' ability to mount an interior attack on a fire scene. This author believes most volunteer and combination fire agencies are lacking sufficient fire fighting resources during the initial stages at a fire incident. It is imperative that the incident commander at the scene

knows that the individuals assigned to the interior of the building and the stand-by fire fighters are capable of performing their assignments. Wearing an SCBA, when performing these tasks is essential to fire fighter health and mandated by enforcement agencies. An annual medical evaluation is mandated for those individuals expected to wear an SCBA.

RECOMMENDATIONS

The results of this research project concluded that experts in the field, and national fire service organizations recommended periodic medical evaluations for fire fighters. In addition, federal and state employee safety and health enforcement agencies mandated periodic medical evaluations for fire fighters expected to perform interior structural fire fighting. Graham Fire & Rescue, like most other fire agencies in the State of Washington, did not require periodic employee medical evaluations.

A ramification of implementing a periodic medical evaluation program at Graham Fire & Rescue is that an employee may have their job function changed, should a health risk come to the surface. In light of prevailing collective bargaining laws in the State of Washington, and the need to bargain the impacts of changes in working conditions with the fire fighter's union, this author recommends forming a labor/management sub-committee with a goal to adopt NFPA 1582, as the agencies medical evaluation program. In conjunction with this effort, administration must discuss the ramifications of the program with the volunteer fire fighting corps and budget accordingly for the implementation of the NFPA 1582 standard.

REFERENCES

American Psychological Association. Fourth Ed. (1994). *Publication manual of the american psychological association.* Washington, DC: Author.

Avery, R. D., Landon, T. M., Jutting, S.M. (1992, Fall). Validation strategies for physical ability testing in police and fire settings. *Public Personnel Management Journal,* 21:3, 303-306.

Davis, P. O. (1994, May). For everyone's survival, hire the fittest. *Fire Chief*, 31.

Davis, P. O. (1996, March). Are physical fitness standards necessary? *Minnesota Fire Chief,* 12.

Des Moines v. Civil Service Commission (1996, July). Physical fitness requirements, agility tests and standards. *Fire and Police Personnel Reporter,* 105.

Emergency Fire-ground Operations-Structural. Washington Administrative Code, 296-305-05001, (1996).

Goldfelder, W. (1992, August). Implementing safety programs in volunteer organizations. *Firefighter's News,*65.

Hogan, J., Quigley, A., (1994, Spring). Effects of preparing for physical ability tests. *Public Personnel Management Journal,* 23:1, 85.

International Association of Fire Fighters, International Association of Fire Chiefs (1998). Two in / two out questions and answers. [On-line], 1-9. Available: http://www.iafconline.org/govrelate/2i2oq&a.cfm.

International Fire Service Training Association. Second Ed. (1991). *Fire department occupational safety.* Stillwater, OK: Author, 35.

International Society of Fire Service Instructors. (1991). *Managing operations.* Ashland, MA: Author, 6.

Labor & Industries, State of Washington. (1998, October). *Standby requirements-a preliminary working draft.* Paper presented at the meeting of Washington State Fire Chiefs, Leavenworth, WA.

Labor & Industries, State of Washington. (1998, October). *Physical capability requirements-a preliminary working draft.* Paper presented at the meeting of Washington State Fire Chiefs, Leavenworth, WA.

National Fire Protection Association. (1992). *National fire codes* (vol. 8). Boston: Author, 1582-6.

National Fire Protection Association. Eighteenth Ed. (1997). *Fire protection handbook.* Boston: 10, 59-65.

Pranka, C. (1993, Fall). Firefighter physical performance standards. *Women in the Fire Service,* 8:2, 1.

Ralifson, F. M. (1995, April). Legislative impact on fire service physical fitness testing. *Fire Engineering,* 83.

Respiratory Protection, Code of Federal Regulations, 1910.134, (1992).

Respiratory Protection, Washington Administrative Code, 296-62-07109, (1982).

APPENDIX

JUSTIFICATION FOR ANNUAL MEDICAL EVALUATIONS FOR FIRE FIGHTERS

Fire Fighter Fitness Survey

EXECUTIVE FIRE OFFICER PROGRAM

Fire Fighter Fitness Survey

1. Does your agency evaluate fire fighter fitness with regards to performing the tasks associated with fire fighting?

YES_____ **NO**_____

2. If yes above, how often?

ANNUAL _____

RETURN TO WORK FROM EXTENDED LEAVE _____

POOR WORK PERFORMANCE _____

INITIAL HIRING PROCESS _____

OTHER (Specify)_____

3. If yes above, what method does your agency employ to evaluate fire fighter fitness?

ANNUAL PHYSICAL BY DOCTOR _____

ANNUAL ANAEROBIC OR MUSCLE EVALUATION _____

ANNUAL TASK PERFORMANCE EVALUATION _____

Type_____

OTHER_____

4. Additional comments:_____

_____

_____